THE VETERINARY RECORD

A Weekly Journal for the Profession.

EDITED BY WILLIAM HUNTING, F.R.C.V.S.

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STAMPING OUT "PLEURO."

A special report has just been issued by the Board of Agriculture concerning the operation of the Pleuro-Pneumonia Act. This Act came into force on September 1st, 1890, and the first year of its action was completed on August 31st, 1891. The work done during these twelve months forms the substance of the report.

The disease still exists, but the facts set out in this report afford strong evidence that the regulations are surely and certainly eradicating the disease, and that only time and watchfulness are required to free the country from this bovine scourge. Professor Brown is never over sanguine, and he says, "It is yet too early to hope that pleuro-pneumonia is on the eve of being extinguished, but it is allowable to refer to the fact that the affection has, since the passing of the Act of 1890, been apparently stamped out in some districts, notably in Lancashire and Essex, in which it has had a constant existence ever since the passing of the Act of 1878, while in Aberdeenshire, where it was most prevalent when the Pleuro-Pneumonia Act came into force, no case has been detected since July last. On the other hand it may be observed that in the first year of the application of the stamping-out system in the Netherlands a similar decrease of disease was the result. It was, however, necessary to continue the severe restrictive measures for several subsequent years before pleuro-pneumonia entirely ceased to exist in the country."

When the Pleuro-Pneumonia Act came into force on September 1st, 1890, there were 46 outbreaks in the month. After twelve months' operation of the Act there were, in August, 1891, only 20 outbreaks. Since this the reduction of the disease has been even more marked; in September last there were only 11 outbreaks, whilst in October and November they were further reduced to 7.

Great difficulties have been experienced in detecting unreported outbreaks, but considerable success has been achieved by an organized system of tracing backwards the history of affected animals. A heifer died from pleuro-pneumonia a few days after she had been sent to the show of the Royal Dublin Society. This animal was traced back to Southampton, and disease discovered in the stock of a dealer. From this man's premises a large number of cattle had been sold, and distributed to various parts of the country. Travelling inspectors were employed to trace these animals, with the result that 126 cattle were discovered in 14 different counties on 71 different premises. All the cattle were slaughtered, and no less than 16 of these premises were found to be infected. What would have been the effect on the spread of the disease if these 16 centres of infection had not been thus discovered?

In another case an outbreak was found on the premises of a dealer in Cumberland. Great difficulty was experienced in tracing his numerous sales of cattle which had been exposed to infection; but success so far attended the efforts of the inspectors that 489 animals belonging to 89 different owners were traced and slaughtered. These possible centres of infection had passed to nine counties in England and Scotland. Such cases as these would reconcile us to the rule of Oliver Cromwell at the Board of Agriculture for a few months. No constitutional proceedings can do justice to men who disseminate disease broadcast.

The cost of slaughter and compensation for all the "contact" animals must have been very great, but the necessity of allowing no chance of infection to escape has been made most evident by some figures in the appended report of the Chief Travelling Inspector.

	Cattle Slaughtered.	Found Diseased.
At Overtown	63	17
,, Stainton	226	58
,, Dunfermline	38	16
,, Dover	31	11
,, Edinburgh	53	22

THE A.V.D. REGULATIONS.

The summary we are enabled to give this week of the regulations for entrance to, and promotion in the Army Veterinary Department disclose only three points of difference from the regulations which have hitherto held good:—

1. Candidates must now be M.R.C.V.S. before sending in an application.
2. No candidate will be allowed more than two attempts to pass the entrance examination.
3. The possession of the Fellowship diploma will no longer exempt officers from examination on promotion.

This last regulation is not flattering to our higher degree, but is only just, as the Army Authorities can have no more knowledge of the standard exacted for the Fellowship than the Council of the Royal College of Veterinary Surgeons. No one knows anything about it, but the Council possesses more simple faith than the Army Veterinary Department.

AN ACKNOWLEDGMENT.

Illness of the Editor during the Christmas week lead to an omission which we much regret. The usual acknowledgment should have appeared at the foot of three Extracts—"A Review of Recent Parasitical Work" from *The Journal of Comp. Medicine and V. Archives*, the article on "Electrical Accidents to Domestic Animals" from *The American V. Review*, and the case of "Comminuted Fracture of the Bones of the Knee" from *The Australasian V. Journal*.

CASES AND ARTICLES

AN UNSUCCESSFUL LAPAROTOMY.

By W. Hunting.

About a month ago I was asksd by a neighbouring practitioner to operate on a setter bitch that had swallowed a stone. Having collected the necessary instruments we went to the surgery where the patient was.

The dog seemed very weak but not quite collapsed; it lay on its side partially curled up. On examining the abdomen some hard body about the size of a large walnut could be distinctly felt; the impression given was just what one would expect to be produced by a stone fixed in the small intestine. The history of the case was that my friend had been called in the day before as the animal was supposed to be suffering from "stoppage." It had been vomiting, and had received one dose of castor-oil from the owner. The symptoms at once suggested to Mr. Roberts a previous case in which a dog had died from having a stone impacted in the bowels, and he therefore made a careful examination of the abdomen with the result that he satisfied himself that this was a similar case.

After removing the hair from the abdomen and washing the skin, chloroform was administered on a sponge placed at the bottom of a paper bag and held to the nostrils. When narcosis was complete an incision about two and a half inches long was made through the median line of the abdomen. The omentum was next divided to an equal extent, and then the stone was felt for with both hands outside the abdomen. It was soon felt and directed towards the opening. With the fingers the knuckle of intestine was drawn through the wound and laid on a clean towel. Unfortunately it was found much discoloured over and around the stone, and for nearly seven inches behind it. The gut was also thickened. This appearance did not make the case look hopeful but we cut into the intestine, removed the stone—a common road pebble with a rather rough surface—and closed the intestine with a continuous suture of aseptically prepared catgut. A little powdered boracic acid was dusted over it, and the bitch gently returned to her bed.

When the effects of the chloroform had passed off she seemed no worse and was left for the night in charge of an attendant. It was then about 8 p.m. and the bitch died at 10 a.m. next morning.

A *post-mortem* examination showed a weak adhesion of the wounds, no peritonitis, and no lesion save the condition of bowel noticed at the operation. Possibly had operative interference been resorted to a day earlier we might have been successful, as the fact of being able to feel the offending body through the abdomen made the operation so much simpler than if we had had to search for it through the incision.

TRANSMISSION OF INJURIES AND BLEMISHES.

By A. D. Hitchcock, V.S.

With reference to injuries and deformities and their effects upon the offspring perhaps the following cases may be interesting.

In 1889 Mr. Allen Stalebrass, at a farm near Southend, Essex, had a three-year-old mare that bolted and came in contact with a cart. The bones of the head were fractured just above the left eye, and the wound healed with difficulty. At four years old she was put to the horse, and at about half her time of pregnancy a second accident bruised the old wound and caused an abscess to form. When her colt was foaled it was totally blind.

In 1874 I bought a seven-year-old mare lame on the off fore fetlock from a sprain. I blistered the leg and turned the mare out to grass. Before the effects of the blister had passed off she came in use and I put her to a roadster horse. The foal was born with a white off fore leg although neither dam nor sire had a white hair on them. The white colour extended just as far up the leg as the blister had reached.

[These cases are interesting, but are not quite instances of what we want. We desire to collect some cases in which a blemish or deformity affecting a mare or horse is transmitted to the foal. The structural change in each must be similar.—Ed.]

VETERINARY EDUCATION.

By Vety. Lieut-Col. F. Duck.

The subject of veterinary education has been before the profession so much of late that it may not be amiss to see what other nations are doing in the matter. With this object in view I communicated with a friend who is on the teaching staff of the State Veterinary College in Brussels. He informs me that a year ago the programme of studies was completely changed in Belgium. Before this time four years study were exacted, now the minimum is five years.

(a) A preliminary course of education is required at a recognised school or college, *lycée ou gymnase*, to qualify for entrance at the University.

(b) At the University the student must spend two years; the course of studies comprising chemistry, botany, mineralogy, zoology, philosophy—moral and logical, etc. On completing this programme a diploma of "Natural Sciences" is granted.

(c) The student has still to pass three years at the State Veterinary College, attending lectures on physiology, histology, anatomy—descriptive—comparative—topographical, bacteriology, pharmacology, shoeing, etc.

At this school, as in many others on the Continent, they have an easy and practical way of teaching shoeing by means of bars of lead of suitable sizes. These bars the students can readily manipulate and

work on the anvil. When finished with the shoes are re-cast into bars for further use.

This programme of studies appears a severe one and probably more than we, at present, consider necessary. But we must look to it that others do not leave us behind in the race for excellence. It does not require one to be a prophet to say that any addition at present recommended will not be held sufficient in ten or fifteen years time.

My friend has just returned from a tour of the veterinary schools of France, Italy, Switzerland and Germany, and it is very satisfactory to hear that at the French schools he heard glowing accounts of the kindness shown during the Congress of Hygiene, etc. in London.

VETERINARY SOCIETIES.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

Quarterly meeting at Liverpool, on Wednesday, 16th December, Mr. Arthur Leather, F.R.C.V.S., President of the Association, in the chair.

Professor M'FADYEAN proceeded with the second part of his address—

"THE LESIONS OF EQUINE TUBERCULOSIS."

He said that some years ago there had come under his observation a horse's spleen that was the seat of very large tumours. These tumours were, as was customary at that time, set down by himself and others who saw the spleen as examples of lymphadenoma, but some time afterwards on proceeding to make a microscopic examination of the growths he found that he had a minute structure agreeing with that of tuberculous formations, and on staining for tubercle bacilli he found these organisms present in great abundance. Since then through the kindness and co-operation of members of the profession in various parts of the country he had been enabled to make observations on about 40 similar cases. As instancing that the immense majority of splenic tumours were really tuberculous, he mentioned that he had not met with more than two or three cases where they were of a different nature. The lecturer then threw on the screen photographs of tuberculous spleens, and for comparison two others with non-tuberculous growths. About one of these he said he had himself been mistaken, for he photographed it as a case of tuberculosis, but when he cut into the tumours they were found to be melanotic.

In the other non-tuberculous spleen shown the growths were sarcomatous. At this point he said that he was unable to show them what was probably in every case the primary lesion in these cases, viz., tuberculous disease in connection with the bowels, and he hoped that if in future any of the members present had an opportunity to make a *post-mortem* in a case of so-called lymphadenoma he would search carefully for bowel lesions. Sections showing typical miliary tuberculosis of the lung were then exhibited from various cases. In the horse the alimentary canal was nearly always the port of infection, a circumstance which raised some speculation as to the source of the infection. The disease might for a long time remain localised to the abdominal organs but in many cases it became general, and then the lung became crammed with miliary tubercles, each of which marked the point where one or more tubercle bacilli had been arrested in a pulmonary capillary.

Sometimes the lung lesions were of a different nature, and specimens were exhibited showing tuberculous broncho-pneumonia in the horse.

The other specimens exhibited were photographs showing the minute structure of tuberculous lesions in the horse, and the distribution of the tubercle bacilli in them. For these and also the photographs of pleuro-pneumonic lesions previously exhibited, Prof. M'Fadyean said he was indebted to the skill of Mr. P. D. Coghill of the London Veterinary College. In passing, he said that, as they would observe, Professor Williams had undoubtedly given a wrong account of the giant cells of tuberculosis, which were seldom or never branched.

The last photograph exhibited was one of a cervical vertebra of a tuberculous horse. This was studded with asperities indicating that there had been some periostitis, but unfortunately he could not say whether that had been of a tuberculous nature. The case had occurred in the practice of Mr. M'Connell of Wigtown, and the symptoms prior to death had pointed to the existence of some such lesion. All the neck vertebræ had been similarly affected on both sides.

The PRESIDENT said he was only re-echoing the sentiments of everyone present in thanking Professor M'Fadyean for coming so long a distance to give such a practical lecture and intellectual treat. It was about the first time that such a demonstration had taken place at any meeting of the Association, and it was to be commended as it gave those who had left college some time, and were acting as practitioners, a chance of seeing what was going on.

Mr. W. A. TAYLOR gave particular instances of tubercular pneumonia found in horses.

Mr. FAULKNER said he had been making observations in this direction for some time. A few years ago it was said that they had no such thing as equine tuberculosis, but as he had seen one or two cases which made him doubt that, he had kept his eye open and had lately encountered several instances. As to the mode of infection it was a matter for very carefully watching. He had a case a short time ago of a 3-year-old. That animal had been supposed to be all right up to 2 years of age, and after a year's grazing it commenced to fall away. In other cases animals were not suspected until 10 or 12 years old, and had lived for 5 or 6 years in the town. It was difficult to know how these became infected, and he hoped that as practitioners the members would take particular notice of matters which might throw light on that point.

Mr. WOLSTENHOLME said, he had frequently had cases of brain affection in horses, and on taking some of the tumours to Owen's College they were found to be tuberculous. It was a great stimulus to to those who were hard at work in general practice to have a Professor come down now and then to lead their minds from the drudgery of their daily work.

Mr. W. A. TAYLOR in proposing a vote of thanks to the lecturer said that they had had quite an intellectual treat, and he hoped that some day they would be able to welcome the Professor in Manchester.

Mr. HOPKIN seconded the motion which was unanimously carried.

Professor M'FADYEAN in thanking the meeting, said that if anything he had said had proved instructive to members of the society he was more than repaid, and would be glad to come there again.

A vote of thanks to the retiring President brought the meeting to a conclusion.

ARMY VETERINARY DEPARTMENT.

REGULATIONS FOR ADMISSION TO THE A.V.D.

The following regulations will be observed in the appointment of Veterinary Officers to the Army Veterinary Department :—

Candidates for admission must make a written application to the Director General, Army Veterinary Department, Horse Guards, War Office, London, with whom a personal interview is necessary.

The minimum age of candidates is 21 years, and the maximum age 26 years, except in special cases, or on urgent occasions, when the latter limit may be exceeded.

Candidates must be unmarried.

Every candidate must be a Member of the Royal College of Veterinary Surgeons.

He will be required to forward the following certificates, prior to examination, to the Director-General, Army Veterinary Department :—

(*a*) A certificate of birth or baptism, or other satisfactory proof of age.

(*b*) Certificates of moral character from clergymen or others in a position to testify, and whose evidence may be deemed satisfactory; also from the Principal and Professors of the College at which the candidate has been professionally educated.

Every candidate will undergo a medical examination, in order to ascertain his state of health and physical fitness.

The professional examination will be in two parts, written and practical.

The written examination will embrace the following subjects :—

Anatomy	Pathology (Cattle)	Toxicology
Physiology	Surgery	Botany
Histology	Chemistry	Hygiene
Pathology (Horse)	Materia Medica	Dietetics
	Principles of Shoeing	

The practical examination will be conducted by a Board of Veterinary Officers, and will include :—

Examination of horses as to soundness.

Examination of horses as to age.

Exterior of the horse, with regard to points, marks, seat of disease, conformation necessary for different kinds of military service, &c.

Operations.

Prescribing, compounding and administering medicine.

No candidate shall be allowed to compete on more than two occasions.

After entering the Service there are further examinations, but the only *new* par. is :—

"The degree of Fellowship of the Royal College of Veterinary Surgeons will not exempt an officer from examination for promotion."

EPIDEMIC AMONG HORSES IN YORKSHIRE. — An epidemic, which has not so far been properly identified, has broken out amongst the colliery horses at Normanton, and over 800 colliers have been thrown out of work. The disease is described as of a peculiar character, resembling influenza. It is very infectious, as is amply proved by the fact that nearly every horse in and about the pits has been affected by it.

EXTRACTS AND NOTES.

INVESTIGATIONS ON THE DESTRUCTION OF MICRO-ORGANISMS BY AMŒBOID CELLS.

By M. ARMAND RUFFER, M.A., M.D. (Oxon.)

More than one year ago I published a paper in which I maintained that the inflammatory process consecutive to the introduction of the bacilli of quarter-evil under the guinea-pig's skin is a protective process serving a useful purpose, and that the destruction of micro organisms at the point of inoculation is carried out entirely by the amœboid cells present in the inflammatory exudation. These conclusions were, on the whole, confirmatory of the theory of inflammation, as it has been built up by my honoured friend and teacher, Elie Metchnikoff, and the further researches, an account of which I am about to give now, have confirmed me in my former opinion that the destruction of micro-organisms in living tissues is accomplished by the cells of the body, and by the cells only. My experiments were all made with the virus of quarter-evil, the *bacillus Chauvœi;* but instead of using guinea-pigs, which take the disease readily, I inoculated rabbits, which are immune against quarter-evil, and therefore lend themselves well to the study of the effects on this virus of the living fluids and cells If the immunity of rabbits be due to the fluids of the body not furnishing sufficient nutritive material, the bacilli of quarter evil ought not to grow at all in these animals, or sparingly at most. If the immunity be due to some bactericidal power possessed by the rabbit's fluids, then degenerated bacilli should be found in the fluids near the point of inoculation. But if, on the other hand, the rabbit's resistance be due to the action of the animal's cells, and not to the action of fluids, then the bacilli should grow freely in the fluids of the animal's body, but degenerate in the interior of amœboid cells.

The first experiments which I made rather inclined me to believe that the *bacillus Chauvœi* did not thrive in the living fluids of rabbits. On placing a little of the weak virus (0·005 mg.) under a rabbit's skin, with antiseptic precautions, and examining the point of inoculation twenty-four hours afterwards, no bacilli were to be found in cover-glass preparations made with the fluid at the point of inoculation. On carefully staining sections of the point of inoculation, however, excised twenty-four hours after the operation, I always found a few leucocytes which surrounded the débris of the powder, and a few typical bacilli enclosed in amœboid cells. If, instead of using such a minute quantity of the powder, I inoculated more (0·05 mg.), extremely numerous bacilli were seen at the point of inoculation, and by giving a somewhat larger dose the animals died of typical quarter-evil in forty-eight hours or three days. At the point of inoculation of such animals the bacilli were present in large numbers, many of them being con-

tained in leucocytes and showing marked signs of degeneration. These degenerative changes exactly resembled those produced on the same bacilli by the leucocytes of guinea-pigs. These experiments prove that the immunity of rabbits against the *bacillus Chauvœi* is not absolute, but only relative, and that this relative immunity is not due to want of nourishing material, for when the dose of virus introduced is large enough, the bacilli thrive exceedingly well.

My next task was to see whether the fluids of animals comparatively immune against the *bacillus Chauvœi* possessed any bactericidal action on the same micro-organisms. Dr Rogers has made the remarkable observation that the serum of guinea-pigs, which are *non-immune* against this micro organism, possesses very strong bactericidal powers on the same bacillus, whereas the serum of rabbits, which are relatively immune, has no harmful action on the *bacillus Chauvœi*. This and other observations prove the truth of what I stated last year—namely, that the bactericidal powers of the *dead* fluids of a given kind of animal against a specific micro-organism is no criterion of the power of resistance of that animal against this micro-organism. Just as *living* blood differs in its optical, chemical, physiological, and other characteristics from *dead* blood, so does the action on micro-organisms of the *living* fluids of the body differ *in toto* from the action of *dead* fluids on the same micro-organisms. In the case of quarter-evil the *dead* fluids of guinea pigs (Roger) possess strong bactericidal action on the *bacillus Chauvœi*, while the living fluid of the same animal (Armand Ruffer) possesses no bactericidal power over the same micro-organism.

In order to study the processes occurring in the living body, I made use of a method which had previously been employed for anthrax by Metchnikoff and others. I placed the powder to be examined in a small bag made of filter paper. The bag was made exactly like those in which pharmaceutical chemists send out powders, but the lower surface, where the ends met, was sealed with paraffin. Some of the first vaccine, 0·05 centigramme, was placed in the bag, and the whole inserted under the skin of a large rabbit and left *in situ* for a period varying from twenty-four to forty-eight hours. The bag was then taken out and its contents examined, whilst the paper forming its walls was at once plunged into absolute alcohol and carefully hardened in that fluid. In the very centre of the powder the numerous bacilli looked for the most part normal, though I must confess that some were irregular in shape, and did not appear to have grown quite as well as others. These bacilli were simple micro-organisms, the growth of which had been retarded; for forty-eight hours after the innoculation, these irregular forms occurred but seldom, or were totally absent. Moreover, the innermost part of the paper in contact with the powder was full of short, straight, thick, and absolutely normal bacilli. Here and there a leucocyte was met with in the interior of the bag; and this fact proves that none of the chemical substances present in the liquid exudation had been retained by the paper, for if a solid particle like a leucocyte could force its way through the paper, chemical substances could not possibly be arrested. The *bacillus Chauvœi* therefore grows perfectly in immune rabbits, and further proofs can be adduced by carefully cutting sections of the paper bag containing the virus after it has remained under a rabbit's skin for some time.

Microscopic examinations of such sections shows that the bacilli are extremely active, as they force their way for some distance into the very fibres of the paper. On the other hand, the leucocytes attracted to the spot by the poison secreted by the micro-organisms migrate in enormous numbers through the paper fibres, until eventually bacilli and leucocytes meet, and then the struggle can be seen in all its intensity, for most of the leucocytes are absolutely crammed with degenerated bacilli. Notice, however, that in the deeper parts of the paper not a single bacillus is to be seen. They have all been arrested by the amœboid cells.

I inoculated a rabbit with 0·005 of stronger vaccine, enveloped in a paper bag and on the sixth day the animal still appeared in perfect health. The paper bag, together with the surrounding tissues, were then removed, and hardened in absolute alcohol. No bacilli were to be found, but innumerable lymphoid cells which had migrated into the paper. Besides mono-nucleated cells, true multi-nucleated giant cells, resembling in all particulars those of tubercle, were also met with. These were formed by the fusion of several epithelioid cells, and, judging from the appearances now to be described, they possessed exactly the same function as epithelioid cells. Many giant-cells contained peculiar glistening, homogeneous, irregular, yellowish bodies, which proved to be nothing more than partially-digested masses of filter paper which they had absorbed. In some places, indeed, these enormous macrophages had been fixed by the reagent at the exact moment when they were absorbing the paper fibre, and one might then observe a giant-cell almost completely surrounding the foreign body, which was still partly sticking out of the cell. This new fact, together with those described by Metchnikoff, Soudakevitch and myself, absolutely prove that the giant-cell is not a weak and diseased structure (Weigert, Koch), but an extremely active and useful amœboid cell—a fighting cell.

It was important to see whether the virulence of weak virus was in any way lessened when exposed to the action of the living fluids of the rabbit, and the following experiments were performed for this purpose. 0, gr. 15 of second vaccine was divided into three equal parts; 0, gr. 05 of this was inoculated into one rabbit (A). This animal developed a typical tumour due to the growth of the *bacillus Chauvœi*, but this gradually disappeared, and the animal very soon recovered its former health. 0, gr. 05 was wrapped in filter paper in the way already described and placed under the skin of another rabbit (B). Twenty-four hours afterwards this animal was placed under chloroform, and a slit made in the paper so as to allow its contents to escape. This animal died forty-eight hours afterwards of typical quarter-evil. In the

same manner 0, gr. 05 of the same virus was introduced under the skin of a third rabbit (C). Forty-four hours after its introduction the bag was artificially ruptured, and twenty-four hours afterwards this animal died of quarter-evil. In order to show that this result was in no way due to the fact that the virus was placed in a part already weakened by the presence of the filter paper, a non-mortal dose was placed in a paper bag under the skin of one rabbit and twenty-four hours afterwards this was removed and the contents introduced subcutaneously into a normal healthy rabbit. The latter animal died in less than two days of quarter-evil.

Further evidence that the disappearance of the virus is due to the action of leucocytes can be obtained if, instead of examining the point of inoculation twenty-four hours after a small dose of virus is introduced, it be examined at the end of three or four hours. It is then seen that many bacilli have indeed developed, but that immediately afterwards they are taken into the interior of the leucocytes which have migrated to the spot. Very few bacilli, therefore, are found floating in the fluid, for most of them are contained in the interior of lymphoid cells, and ultimately are destroyed by the cells which have migrated to the spot.

We shall see presently that it is possible to produce in rabbits, by the inoculation of the *bacillus Chauvæi*, a disease which proves fatal in less than twenty-four hours. It is a noteworthy fact that in such rapidly fatal cases not a single leucocyte is found near the point of inoculation, although abundant exudation of sanguineous fluid takes place, in which the *bacillus Chauvæi* thrives exceedingly well.

Charin had asserted that if an immune animal be inoculated with a strong virus and recovers, the virus gradually loses its power; so that, after living in the fluids of immune animals, it can no longer reproduce the disease in another animal. The following experiments have led me to absolutely different conclusions:—Rabbit (A) inoculated with 0, gr. 05 of second vaccine, so as to produce a small localised collection of fluid. A small paper bag was then filled with 0, gr. 001 of first vaccine and placed under the skin of the same rabbit, so that it was surrounded by the virus first introduced and was soaked in the exudation liquids of the animal suffering from a mild attack of the disease. Two days afterwards the rabbit (A), the temperature of which had oscillated between 101° and 103°, was killed by the inhalation of chloroform. The whole abscess-wall was scraped and injected under the skin of a guinea-pig (*a*). The paper bag was carefully opened and a trace of its contents placed under the skin of another guinea-pig (*b*). The first of these two became extremely ill, but ultimately recovered, whilst the guinea-pig (*b*) died of acute quarter-evil in less than forty-eight hours. A white rabbit (B) was inoculated in the same manner as rabbit (A), and the same experiment repeated, except that the paper bag was allowed to remain for four days under the rabbit's skin. The guinea-pig inoculated with the abscess-wall died in two days, whilst the animal which had been inoculated with a trace of the contents of the paper bag died about twelve hours before the former animal. In these cases, therefore, the virus living in the fluids of an animal which was gradually recovering from the disease lost none of its power.

I am able to confirm, as far as the poisons secreted by quarter evil are concerned, the researches of Messart and Bordet, Gabsitchewsky, and Buchner, showing that the chemical poisons secreted by micro-orgrnisms attract the leucocytes to the spot where they are introduced. I took the muscles round the point of inoculation of a rabbit which had died of acute quarter-evil of inoculation and pressed out the fluid. This fluid was then filtered on a Chamberland's filter, and a small piece of sterilised sponge was allowed to soak in this liquid, free now from micro-organisms, but still containing the chemical substances secreted by the latter. This, together with another small piece of normal sterilised sponge, was placed under the skin of a rabbit and examined after three hours. It was then found that the normal piece of sponge contained but few leucocytes, whilst the piece of sponge previously soaked in the exudation fluid was crowded with amœboid cells. Clearly the poisons present in the muscles of the diseased animal have an attractive action on leucocytes.

It can be shown that in some diseases, at least when the disease ends fatally, the leucocytes lose the power of leaving the vessels in order to proceed to the point which is irritated.

Whilst this was being written, I received through the kindness of Messrs. Messart and Bordet a copy of a paper in which these observers show that lactic acid has indeed the power of repelling leucocytes. My mode of procedure, which, without knowing of the Belgian observer's results, had led me to a similar conclusion, was as follows: I took two small pellets of cotton-wool and introduced them both under a guinea-pig's skin; but, whereas one of the pellets was normal sterile cotton-wool, the other one had been soaked for two hours in British Pharmacopœia solution of lactic acid. The pellets were taken out six hours afterwards and their contents squeezed out on clean slides and examined. The normal cotton-wool was crammed with leucocytes, but the pellet which had been soaked in lactic acid contained none at all. It remained yet to be proved that the action of lactic acid is the same when it is injected together with the virus of quarter-evil. Around the paper bag (A) were numerous leucocytes, many of which contained bacilli. The contents of the bag consisted of leucocytes holding bacilli in their interior and a goodly number of free bacilli. The muscles around the bag appeared almost normal, and there was no noticeable œdema. The state of affairs on the other side, where the virus had been placed after soaking in lactic acid, was very different. The fluid immediately surrounding the bag contained very few leucocytes, most of which were empty, while in the bag itself there were but few leucocytes holding no bacilli in their interior. This experiment proves that owing to the repellant action of the lactic acid,

the disease becomes intensified as the leucocytes are unable to act efficiently. Lactic acid, however, is not the only poison which has the power of repelling leucocytes. Carbolic acid, sublimate, iodine, turpentine, croton oil, all have the same effect; but it is an extraordinary fact that whereas strong solutions of these substances repel leucocytes, very weak solutions attract powerfully the same cells.

Another animal had 5 m. of the same fluid injected into the muscles of the right leg, and 5 m. injected into the veins. Fifteen hours afterwards that animal was found dead, cold already, with an enormous tumour of the leg at the point where the virus had been inoculated. Microscopic examination showed that the muscular fibres at the point of inoculation were separated by exudation fluid containing in parts an enormous number of normal bacilli, but not a single leucocyte was to be seen anywhere near the point of inoculation. The heart, kidney, and lungs contained no bacilli, and nowhere could I find any lying free in the blood, but the amœboid cells present in the liver and spleen were often quite full of micro-organisms. It is clear from these experiments that, although the leucocytes were able to wage war against the bacilli present in the vessels—although they were perfectly active,—yet they refused to leave the vessels in order to destroy the bacilli present outside the vessels. Guided by some theoretical reasons, I felt convinced that this failure of the leucocytes to fulfil their functions was due to some vascular changes. My theories proved to be wrong, however, for I found that, although the leucocytes refused to go and fight the *bacillus Chauvæi*, they left the vessels with alacrity provided they had some other object of attraction. Repeating the last experiment and inoculating the bacillus pyocyaneus into the ear at the same time, I found, six hours afterwards, the point of inoculation of the bacillus pyocyaneus crowded with leucocytes, which were extremely active and greedy, whereas not one leucocyte was to be found at the point of inoculation of the *bacillus Chauœi*.

Conclusions—Having arrived at the end of this long enumeration of facts, I may be allowed to point out shortly what conclusions may in my opinion be deduced from the experiments just described, though of course the conclusions can only hold good for the virus I have used in my observations. In the first part of my paper it was shown that when a small quantity of virus is introduced, an observer might feel inclined to believe at first that the *bacillus Chauvæi* does not grow, and that the fluids of immune rabbits exert a harmful action on that micro-organism. Careful examination, however, shows that the bacillus grows very well, and, provided enough of the virus be introduced, its growth becomes obvious to the most careless observer. The comparative immunity of rabbits against the *bacillus Chauvai* therefore is not due to the fluids of these animals not possessing sufficient nutritive material for this bacillus.

Dr. Klein states that it has been proved beyond question that when the blood of an animal immune against a certain disease was injected into a non-immune animal suffering from the same disease the development of the disease is stopped. All I can say is that I wish it were so. There is not the slightest particle of evidence to show that the serum of an immune animal when injected into another animal acts in the way described by Dr. Klein. The blood of rats, which is alleged to cure diphtheria in guinea-pigs, is an excellent cultivating medium for the bacillus of diphtheria. The blood of rabbits, which is supposed when injected into mice to cure tetanus, is an excellent cultivating medium for the bacilli of tetanus. Nay more, rabbits are not immune against tetanus. It seems to me, therefore, that Dr. Klein is hardly justified in saying that, as regards the destruction of bacteria, the leucocytes might just as well be absent altogether.

Now let us see what really did happen in my experiments. We saw that both in guinea-pigs and immune rabbits the bacilli commenced growing as soon as they were introduced and that the leucocytes gathered to the spot where the micro-organisms had been introduced. We saw that the leucocytes were attracted to the spot by the chemical poisons sereted by micro-organisms, and that they violently attacked the micro-organisms, took them into their interior and destroyed them. Notice that the cellular emigration at the point of inoculation varied inversely to the quantity and strength of the virus introduced, but was in proportion to the length and curability of the disease. Slight or even totally absent when a large quantity of extremely virulent bacilli was injected, the emigration of leucocytes was more marked when a few virulent ones were introducrd, or when, the quantity of virus introduced being large, its virulence had been previously diminished. Notice, moreover, that whenever, from any cause, mechanical or chemical, the leucocytes were prevented from reaching the virus, the disease invariably progressed and the animal died. This was well demonstrated when, after enveloping the virus in filter paper, and allowing it to remain under the animal's skin, the protection of the paper was removed. It was proved that when the leucocytes were repelled by the action of lactic acid on one side of the body, the disease only developed on that side, and that when the cellular emigration was arrested by injecting the bacterial poisons into the blood-stream, the disease progressed with an appalling rapidity. What I have said of cellular emigration, however, by no means applies to the other necessary accompaniment of inflammation—namely, exudation. It rather would appear as if the two stood in some inverse relation to one other. Compare, for instance, the thin, sanguineous exudation of a rabbit dying in twelve hours from the inoculation of the *bacillus Chauvæi*, and the thick, tenacious, "solid" material which accumulates around the virus inoculated into a resistant animal. Is that not evidence enough that, in this disease at least, exudation of fluid is always more marked when the disease is most virulent? But in spite of the enormous quantity of this exudation (supposed by some to have strong bactericidal powers), there is not a sign to show that the micro-organisms are injuriously affected by it. On the contrary, the latter grow

and thrive excellently well, and acquire such an increased virulence that I should advise the greatest care to all those who are obliged to handle animals so inoculated.

Another point which stands out clearly is that when once the animal substances produced by a micro-organism have penetrated into the blood, the poisons secreted by the same micro-organism in other parts of the body fail to attract leucocytes. See, for instance, the results I obtained with the bacillus pyocyaneus. Injecting a drop of the culture into a rabbit's eyes, the leucocytes emigrated to the spot in large quantities. But when the poisons produced by the bacillus pyocyaneus were already circulating in the blood, the leucocytes no longer left the vessels. Notice again that the same result was obtained when the *bacillus Chauvæi* was injected both subcutaneously and intravenously. In the case of the bacillus pyocyaneus, there is some evidence to prove that the leucocytes are actually paralysed; for Charrin and Gamaleia have shown that the application of croton oil to the ear of an animal poisoned with the products of the bacillus pyocyaneus is not followed by inflammatory reaction at the point where the oil is applied. The explanation, however, does not hold good for the results obtained with the *bacillus Chauvæi*. Here the leucocytes in the bloodvessels and in the spleen were extremely active, but absolutely powerless to emigrate into the surrounding tissues, in order to attack bacilli of the same species. Their absence of emigration was not due to some change in the vessel-wall, however, for the leucocytes left the vessels to attack another bacillus—namely, the bacillus pyocyaneus. Similarly the leucocytes of an animal afflicted with anthrax declined to attack anthrax bacilli but cheerfully accepted any other diet offered them. And here again, the refusal to emigrate was not simply due to spasm of the vessels or any other vascular cause, as these same cells emigrated freely when any other stimulus was applied. The reason for these apparent anomalies is, that as long as the chemical substance which attracts the leucocytes is present outside the vessels only, the cells emigrate to the spot where this chemical substance is to be found; but as soon as this chemical substance is present in equal or larger quantities in the vessels as in the surrounding tissues, the leucocytes no longer attempt to leave the vessels.* *The Lancet.*

MICROPHAGIC ACTION IN THE SPLEEN IN RECURRENT FEVER.

Soudakewitch (*Ann. de l'Inst. Pasteur*, September 25th, 1891) describes some experiments on recurrent fever. It was first proved in 1873 by Obermeier that in the blood of patients during the paroxysm a peculiar spirillum could be found which was extremely difficult to stain, and which disappeared at the crisis to reappear at each recurrence. He suggested that during the period of apyrexia the spirilla became stored up in the internal organs—probably in the spleen. In 1887, however, Metschnikoff inoculated several apes, killing them at different stages of the disease. He was able to show (1) that the destruction of the spirilla by phagocytosis or other means never occurred in the blood; (2) that before the spirilla, which were abundant and active in the blood all collected in the spleen, where they became enclosed in microphages (or leucocytes with bilobed neuclei)—there they underwent degenerative changes; (3) in the liver, kidneys, and other organs no spirilla were discoverable, the whole struggle thus appearing to take place in the spleen. Soudakewitch's plan was to observe first the course of the disease as producible in normal apes, and then to notice what happened on inoculating animals whose spleens had been previously removed by operation. The normal course of the disease proved to be as follows: (1) Incubation period on the average three days; (2) rise of temperature then occurred, and spirilla appeared in the blood, gradually increasing in number till the crisis, when they disappeared; (3) recurrences were not observed, but a second inoculation after a fortnight's interval caused the return of symptoms as before. Killing the animals at various periods he found, (*a*) during the acute stage, spirilla only in the blood, a few being found in the vena cava enclosed in leucocytes, but nearly all being free and active; (*b*) just after the crisis no spirilla in the blood, all being collected in the spleen, enclosed in microphages, and many undergoing degenerative changes; (*c*) ten hours after the crisis no spirilla anywhere, and only indistinct *debris* in the microphages, the Malpighian corpuscles being much enlarged and consisting of masses of closely-pressed leucocytes.

As regards the course of the disease in apes after removal of the spleen, this was observed in two cases, with the following results: (1) An incubation period of three days; (2) illness, with progressively falling and oscillating temperature, loss of appetite, and death in one case on the eighth, in the other on the ninth day; (3) spirllla appeared in the blood on the third day, increasing afterwards till they absolutely swarmed, being even more numerous than the blood corpuscles. Phagocytosis in the circulating fluid was absent. At the *post-mortem* examination it was found that one of the animals had a small tumour behind the stomach, which proved to be a supplementary spleen which had escaped removal and subsequently had become enormously enlarged. In this body all stages of phagocytosis were observable, the spirilla being all enclosed in cells. In the blood of other parts of this animal there were large clots of active spirilla, especially in the vena cava, without any attempt at phagocytosis. Their number was still more extraordinary in the other animal, there having been no remnant of spleen to resist the inroads of the microbes, which were entirely free and living, and showed no signs of degeneration.—*Brit. Med. Journal.*

* See also Massert and Bordet, Annales de l'Institute Pasteur, 1891.

AN INFECTIOUS BRONCHO-PNEUMONIA OF AMERICAN OXEN: CORN-STALK DISEASE.*

By Professor Nocard, Veterinary College, Alfort.

During last winter several thousands of magnificent oxen from the United States, notably from Virginia, Indiana, and Illinois, were exposed for sale at the market of La Villette.

On three different occasions the sanitary service of the market has observed in some of these animals a disease of the organs of the respiratory

* Recueil de Médécine Vétérinaire, 30th August 1891.

apparatus different from any that we are acquainted with in France. It is of this malady that I desire to speak in my own name and in that of my colleagues in the sanitary service of La Villette—MM. Redon, Godbille, and Blier.

On the 15th of November last M. Blier was informed that M. Paquin, market commissioner, had just caused to be conducted to the abattoir an American ox that appeared to be very ill. M. Blier immediately repaired to the abattoir; when the subject was opened he found that the anterior lobe of the right lung was the seat of an acute and recent hepatisation; the absence of pleurisy, and the fact that the infiltration of the interlobular connective tissue septa was but little marked *(peu accusée)*, spoke in favour of a simple pneumonia; nevertheless M. Blier did not dare to assert that it was not a case of pleuro-pneumonia of an abnormal form.

This ox was one of a herd of over 400 head coming direct from Indiana and Illinois.

On the morning of the following day (16th November) M. Godbille, in the course of his visit to the cattle sheds of the market, ascertained that one of the American oxen had died during the night, and that two others presented symptoms suspicious of pleuro-pneumonia, viz., "dulness, grunting, slight abortive cough, and elevated temperature (42·2 and 42·5 C.); on auscultation, dulness and absence of the vesicular murmur at the lower part of the chest, a blowing sound and crepitation at the upper limit of the dulness."

With the consent of the commissioner the two sick animals were sent to the abattoir and immediately killed.

The autopsy showed the existence of lung lesions identical with those observed on the previous day by M. Blier; there had not been any pleurisy, but the interlobular septa of connective tissue in the hepatised parts were the seat of a very abundant serous infiltration.

Before coming to a decision, which was important on account of the number and value of the animals suspected, M. Redon sent me the lungs of the two oxen that had just been slaughtered, and requested my opinion regarding the nature of the lesions which they presented.

At the first glance the section of the hepatised tissue presented the aspect of a recent pleuro-pneumonic lesion; the tissue was dense, firm, compact, friable, of a colour varying from light red to deep brown or almost black; the lobules were isolated the one from the other by thick connective-tissue septa, infiltrated with a considerable quantity of yellowish limpid serum.

A more attentive examination enables one to observe some notable differences between these lesions and those of pleuro-pneumonia.

The connective-tissue infiltration is less abundant; the serosity is less albuminous, of a less pronouncedly yellow tint, and less perfect limpidity: here and there pressure causes small fibrinous whitish smooth concretions of a firm consistence to spring out of lymphatic sacs distended to excess. The tissue of the lobule imprisoned in this zone of immoderately thickened connective tissue has not the uniformity of tint and consistence that characterizes the lesion of pleuro-pneumonia; it is harder, more manifestly hepatised at its central part than at its periphery; *the lesion proceeds from the bronchus, and not from the perilobular tissue.* In pleuro-pneumonia the contrary is the case; there when the lesion is very recent one often finds lobules whose tissue is dense and blackish at the periphery while the centre is still red, flaccid, and permeable.

There is another important differential symptom: pressure causes the escape from the bronchi of a notable quantity of thick, viscous, whitish-yellow muco-pus, very similar to that which one observes in certain forms of verminous broncho-pnemonia; an extemporaneous microscopic examination sufficed to eliminate this hypothesis; the muco-pus of the bronchi and the pulp obtained by scraping the hepatised tissue enclosed neither eggs, embryos, nor worms of any sort.

Incision of the bronchi shows that the mucosa is inflamed, thickened, folded, with more or less desquamation of its epithelium; the sub-mucous connective tissue is always infiltrated with a yellowish serosity; it acquires sometimes a considerable thickness.

On the other hand, this muco-pus of the bronchi encloses in abundance a short ovoid motile bacterium, which seems to exist there to the exclusion of every other microbe. This bacterium is found equally in the state of a veritable pure culture in the hepatised tissue, and especially in the limpid serosity which distends the perilobular lymphatic sacs.

This character alone warrants the assertion that the lesion in question is not of the nature of pleuro-pneumonia, for one knows that the serosity of pleuro-pneumonia is extremely poor in formed elements, and that when collected pure from the infiltrated connective-tissue septa it does not ordinarily contain any microbe.

The microbe which exists so abundantly in the pulmonary lesions under consideration belongs to the great class of ovoid bacteria, of which the rounded poles fix the aniline colouring matters more energetically than the central part; fowl cholera, duck cholera, rabbit septicæmia, ferret septicæmia, the *barbone* of the buffalo, pneumo-enteritis of the pig, etc., have for their agents analogous microbes, which can be distinguished from one another only by the totality of their biological characters and especially by the effects of their inoculation to the various experimental animals.

This one, the most recent of the series, is very small; it measures 1 μ in length, by ·3-·4 μ in thickness; it is motile; it stains well in dilute aqueous solutions; the central clear space is particularly well seen after staining with diamond fuchsin or methylene blue; it does not stain by the methods of Gram or Weigert.

Culture of the microbe is easy; it succeeds well in the different neutral or slightly alkaline *bouillons;* it can be done equally well in contact with the air or with that excluded; the reaction of the liquid of culture is not sensibly modified; milk is not coagulated; whatever be the medium of culture utilised,

the microbe preserves for a long time its power to vegetate and its virulence.

When inoculated by streak culture on gelatine peptone the microbe develops rather abundantly as a thin, bluish, translucent layer with festooned edges like a fern leaf; the gelatine is not liquefied.

On agar the culture develops quickly and abundantly without any special characters.

On potato the culture is effected with difficulty under the form of a thin, greyish, moist pellicle, with badly defined edges.

The results of inoculations are always the same, whatever be the source of the virulent product inoculated, whether muco-pus from the bronchi, serosity from the connective-tissue septa, etc., or cultures old or recent.

Mice, rabbits, guinea-pigs, and pigeons inoculated subcutaneously in doses of one, two, or three drops of serosity of culture succumb in less than forty-eight hours without œdema at the point of inoculation, with intense congestion of all the viscera, without localisation more marked on one than on the other. If one examines the blood immediately after death one finds in it ordinarily only a small quantity of bacteria; the number becomes considerable if the autopsy is delayed, especially if the pipettes which have been used to collect the blood pure are left in the incubator for some hours.

If the inoculation is made into the peritoneum death follows in from fifteen to eighteen hours with a purulent peritonitis of extreme intensity. The pus, which is very abundant, very viscous, and non-fibrinous, encloses an enormous quantity of bacteria.

The sheep and the calf inoculated under the skin or into the trachea with 1 cc. of culture, serosity, or virulent pus do not die; they have intense fever rising above 41; they remain depressed and without appetite for some days, but they very rapidly return to the normal state.

Intra-pulmonary inoculation is more efficacious; a calf of eight months old and a two-year old ram inoculated into the right lung with five drops of peritoneal pus from a guinea-pig succumbed in less than forty-eight hours, with fibrinous pleurisy and exudative broncho-pneumonia analogous to that observed at the autopsy of the American oxen above referred to; these lesions were extremely rich in bacteria.

Strange to state, a calf and two sheep previously inoculated under the skin and then into the trachea afterwards resisted the intra-pulmonary inoculation of ten drops of virulent culture; their temperature remained for three days above 40·5; a very marked sensitiveness of the chest-wall and some dulness in the lower two-thirds of the inoculated lung were observed, but all that promptly disappeared, and since then the same animals bore without apparent trouble two new intra-pulmonary injections of serosity and of culture.

It thus seems that subcutaneous inoculation, which is powerless to kill the larger animals, confers on them a certain degree of immunity, permitting them to resist pulmonary inoculation, which is ordinarily fatal.

I have been able to experiment on only one pig, aged between three and four months; I caused it to ingest successively the *débris* of all my experimental animals (three pigeons, a dozen rabbits, and over twenty guinea-pigs); I afterwards injected cellulo-adipose tissue of the throat 2-3 cc. of virulent culture; it never appeared ill.

The fowl, the dog, and the rat resist all modes of inoculation.

It will be seen that the affection in question has no resemblance to anything that has been described in France. It seems very probable that it is a disease special to American oxen; it cannot be absolutely rare there, for since the month of November, 1890, we have observed it, always identically the same on two occasions—in February and in June last; the affected animals belonged to lots also drawn from the States of Indiana or Illinois.

But is this disease, unknown in France, known to American veterinarians?

I have made some researches in regard to this, and I believe that it is the same as that which the breeders in the Western States designate by the name of "corn-stalk disease."

Billings speaks of it in his "Report on the Work of the Laboratory of Nebraska for the year 1888." Although the description that he gives of it is rather summary—he had at his disposition only a small number of specimens sent from a distance—it corresponds pretty closely with what I have been able to observe on my side.

However that may be, it follows from the facts that I have just stated that American cattle are exposed to contract a micro-parasitic broncho-pneumonia hitherto unknown in France. That being well established, it may at once be asked, What sanitary measures ought to be taken in the circumstances? We have already a great deal to do in struggling with our indigenous maladies; is it necessary to run the risk of seeing the number augmented by the acclimatisation of the "Corn-stalk Disease"?

The Department of Agriculture asked my opinion on this point. An attentive observation of the facts and the experimental study of the condition of contagion impose the conviction that the disease had only very feeble contagious properties. In the three very important lots in which the disease showed itself, notwithstanding the considerable number of animals and the long duration and intimacy of the contact, the disease did not spread, and the case remained isolated. If one considers, besides, that the American cattle imported into France are destined exclusively for the butcher, it seems scarcely probable that the disease in question could propagate itself in France.

At any rate the danger is not such that one could not ward if off by urgency should the events falsify these anticipations.

A strange illness broke out recently in the Zoological Gardens, Amsterdam, among the beasts of prey. In three days 16 creatures have died, including several of the finest lions and tigers. The cause has eluded discovery, even after an autopsy. All the beasts died after only two days' illness.

THE DANGER OF ADMINISTERING PHYSOSTIGMIN IN PREGNANCY.

Horner describes two cases in which abortion followed the administration of physostigmin to pregnant mares.

Case I.—A mare at an advanced stage of pregnancy showed symptoms of colic from some unknown cause After an administration of $^1/_{10}$ gramme of physostigmin in 2 cc. of water the respirations became hurried, there were muscular tremors, perspiration and straining. After half-an-hour fæces were passed, the mare became quieter, and respiration less hurried; but after another hour intermittent pains set in, and at the end of two days abortion took place.

Case II.—Another mare received the same dose in similar circumstances, and with similar consequences. Fæces were passed after twenty-five minutes; after three-quarters of an hour strong pains set in, and lasted for half-an-hour. After this the mare became quiet and began to eat but on the following day pains again set in, and abortion occurred a day later.—*Wochenschrift f. Thierh u. Viehz.*

Sir F. FitzWygram and the Hants Volunteers.

There is probably no greater friend to the Volunteers of Hampshire than General Sir Frederick FitzWygram, Bart., M.P. As Honorary Colonel of the 2nd V.B. Hants Regiment, that officer has done much to encourage improvement in shooting, while the assistance he rendered to the First Hants Artillery in connection with their fine new drill hall in Southampton is well known. From the very commencement of the Volunteer movement in England, Sir Frederick countenanced and aided its establishment and progress when military officers and others were rather disposed to throw a wet blanket over the organisation. A further debt of gratitude is now owing to the genial baronet by the First Hants Artillery, for he has presented them with a drill hall at Eastleigh. The hall is approached by means of a wide and well made road and covers a superficial area of nearly 2,500 feet. It is designed specially for its prime use, utility rather than appearance being the chief consideration. The material used is red brick; the roof is semi-circular, of timber, with latticed timber girders. Along the upper portion of the walls, east and west, are numerous windows, and abundant provision is made for artificial lighting by gas. It is proposed to erect a platform at one end of the hall, so that meetings may be held there if desired. There are four entrances, and the whole work is of a very substantial character. The opening ceremony, performed by Lady Fitzwygram, took place on Saturday afternoon, December 19th.

Sir Frederick FitzWygram, who was received with loud applause, said it was with great pleasure he was able to present for their use that drill hall. It was, he hoped, comfortable and commodious, and he trusted they might rely on the loyalty and patriotism of the young men of Eastleigh to furnish a second company. In Eastleigh they had exactly the class of men wanted for artillery. It was not possible to man the guns used in the present day with infantry regiments, having only one skilled artilleryman to each gun. Every man must be skilled. He looked year by year, and day by day, with increasing anxiety to the increasing importance of the Volunteer organisation. All volunteers were useful and valuable. This was known and acknowledged, but he knew of no class of Volunteers more useful and valuable than the Artillery, especially on the southern coasts. Sir Frederick referred to the fact that Mr. Stanhope was the first English Secretary for War who had realised the necessity of giving to them the means of practising with the great and powerful guns they would have to wield in war, and this would be a great advance in the defensive power of the country for years to come. They had a future before them. They and other Volunteer corps would mainly have the defence of the Solent, as it was impossible for the Royal Artillery to furnish sufficient men for the purpose. In concluding, Sir Frederick dwelt upon the importance of this, and formally handed over the hall to the corps. (Applause).

Lady FitzWygram, who was introduced by the Colonel Commanding in a brief but highly complimentary speech, and was received with very loud applause, said: I have very great pleasure in declaring this hall open, and I trust that you will all find it most convenient for the purpose for which it is intended. (Applause).

Colonel Bance then handed to Lady FitzWygram a handsome silver key as a memento of the occasion, and to enable her, if so disposed, to gain admission to the hall at any time to see that it was being used for its intended purpose; and in acknowledging the gift, her Ladyship said it was a very pleasing duty she had performed. (Applause).—*The Hampshire Independent.*

Capt. Simonds.

Captain J. S. Simonds who has been appointed to succeed Sir Eyre Massy Shaw, as chief of the Metropolitan Fire Brigade, is the only son of Professor Simonds, formerly Principal of Camden Town College. Capt. Simonds commenced his career as articled pupil with Messrs. Ransome & Sims, of Ipswich, and afterwards studied Civil Engineering, but eventually followed up the mechanical branch of the profession. He held a commission in the Reserve Forces for 10 years. In 1881 he was appointed second officer of the M.F.B. from a total of 130 candidates for the post.

REVIEWS.

THE LIVE STOCK JOURNAL ALMANACK, 1892.

This annual quite maintains its usual high standard of quantity and quality. In addition to all the information connected with calendars, stamps, postal arrangements, &c., we have lists of markets and fairs, of cavalry regiments, veterinary and agricultural colleges, chambers of agriculture, and live stock societies of all kinds.

The bulk of the book—it extends to about 250 pages—consists of forty special articles written by experts upon all sorts of live stock. To critically notice these would require about a dozen different men. So we must condense our remarks into little more than a catalogue.

There are five articles on breeding, all of which are interesting, and to which we propose devoting some notice on a future occasion. Three contributions are from veterinarians. Mr. A. J. Sewell

writes on "Hygiene of Kennels," and no one can impeach his pre-eminent authority on that subject. Dr. G. Fleming contributes a very suggestive article on "Horses' Teeth," in which he refers to the fact that amongst the skulls of old horses found at the slaughter yards irregularities of the teeth are very common, and some very serious. Many of these are apparently unnoticed during life, and thus discomfort and pain which interferes with an animal's usefulness, must exist for months or even years. The loss entailed is to be met by the simple process of having horses' teeth inspected whenever any symptoms can be traced to them, or when facial symptoms are seen and not understood.

Professor Axe writes on "The Worst Side of Water," and we turned to the article with doubt as to whether or not the Professor had taken to giving advice on sporting matters, and might next year descant on "The Best Side of Timber." The article is a warning to stock-owners that water may be a source of disease, and that contamination arises from various causes. It is rare to suspect the water supply of injuring animals, especially if the evil effect is not immediately fatal; and too often the pernicious effects of foul water are overlooked. The moral is that stock-owners should exercise greater watchfulness over their water supply.

The special breeds of horses, cattle and sheep are each treated to a review of their doings in 1891. Pigs, dogs, and poultry are also discussed by experts in separate articles.

It is a wonderful shillingsworth, and no one interested in live stock can fail to find in it numerous articles which he will read with pleasure and profit; after that it is a work of reference for the next twelve months.

Vinton & Co., Ludgate Circus.

MEAT INSPECTION.

So thoroughly did Professor Walley's little book on this question meet the necessities of the case that the whole first edition has been absorbed. The second edition now just issued, revised and enlarged, remains "a practical guide," but it is also the standard text-book on the subject. Those veterinarians who have not yet added "meat inspection" to their libraries should do so at once. They will find it invaluable, containing as it does all the most recent information bearing on the subject, collected and arranged in a clear and concise manner. Several coloured sketches have been added to the new edition, illustrating the lesions of diseases of an important character. The index has been enlarged, and renders reference to any special part most easy. The type and paper are excellent. It is a book for students as well as for practitioners, and well deserves the success which has attended it. Probably on its first appearance few readers expected it would so soon run into a second edition. Is not the demand very suggestive of the important public position the subject is now assuming? May not veterinary practitioners—especially urban members—draw the inference that they cannot too closely identify themselves with these matters of public health, and that no opportunity of making themselves really masters of the subject should be neglected?

A Practical Guide to Meat Inspection. By Thomas Walley, Principal of the Edinburgh Royal (Dick) Veterinary College. Second Edition, with 47 coloured illustrations. Edinburgh & London: Young J. Pentland, 1891.

CORRESPONDENCE.

"'HOOSE' IN CALVES."

DEAR SIR,

For the information of Mr. James, of Thornbury, I beg to state I was incorrectly reported to have stated, "I even know of 40 calves which have never been turned out," etc., etc. What I said was to the following effect, "I once saw a lot, out of a batch of 20 or 30 at Sleaford, from 11 to 20 weeks old, but I did *not know whether they had been turned out*," etc. I had a letter from Mr. Hoole to-day, in which he says they had been turned to grass for some time before I saw them.

I have known about 12 calves that were being reared and had never been out of the shed, or fed on any particle of green food, and 10 out of the lot died of "Hoose"—I believe my friend and *confrère*, Mr. Rudkin, is treating a similar lot of calves under the same conditions for "Hoose" at the present time.

Yours faithfully, B. H. RUSSELL.

Grantham, *Jan.* 2, 1892.

SCOTCH MEMBERS OF COUNCIL.

SIR,

No attention seems to have been paid to the action of the Council in passing by Mr. Burnett's proposition to alter our method of electing Members of Council. Only one Scotch practitioner sits on the Council of thirty men at Red Lion Square. We cannot possibly elect a man of our own in opposition to the voters in England, and we think we should be in such an independent position as to be able to return a proper proportion of Scotchmen for Scotland. According to the number of members of the College and the place of their residence we ought to have five members on the Council.—Yours faithfully,

"SCOTUS."

[Our correspondent is guilty of a *suppressio veri* in saying "only one Scotch practitioner sits on the Council." There are four members of Council resident in Scotland and that is not an unfair representation even if we had territorial electoral districts. If Scotland is not fairly represented her practitioners are to blame. When they desire the election of any special person as a representative they must combine and let their wishes be known to the whole profession. We should be glad to see on the Council some new members from Scotland who would attend.—ED.]

Original articles and reports should be written on one side only of the paper, and authenticated by the names and addresses of the writers, not necessarily for publication.

We shall be obliged by early intelligence of all matters worth bringing under the notice of the profession, and thankful to any friends who may send us cuttings from local papers, containing facts of interest.

Communications for the Editor to be addressed 20 Fulham Road, S.W.